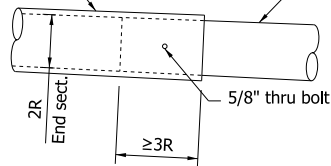
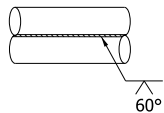


End section extension with wall thickness 3/16" and with drilled hole for 5/8" bolt



② **OPTIONAL ARM SPLICE DETAIL**



⑥ **TYPICAL SEAM WELD**

Base section with wall thickness 5/16" and field drilled hole for 5/8" Bolt

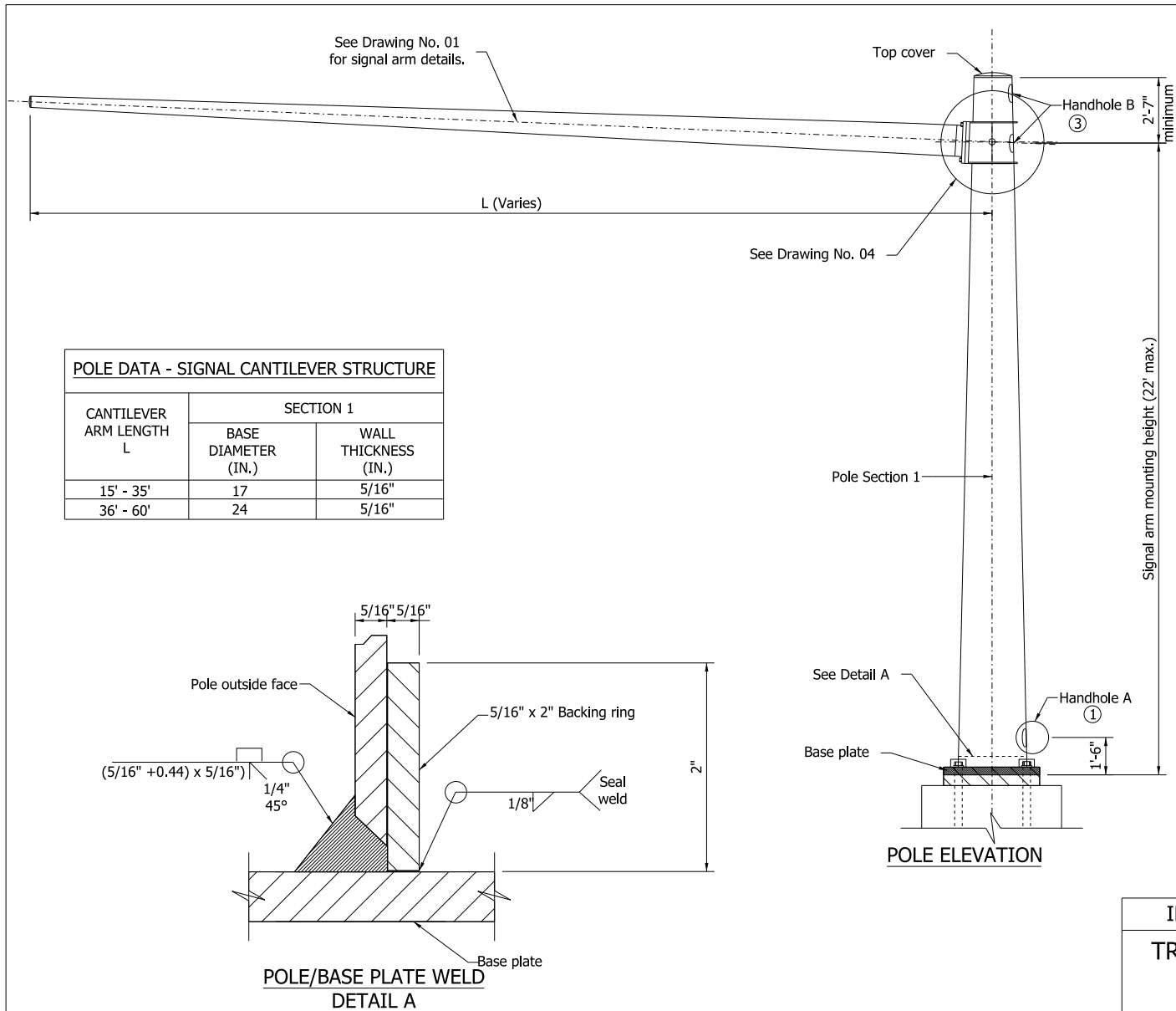
CANTILEVER SIGNAL ARM DATA				
L (ft.)	ARM DIAMETER AT POLE	ARM WALL THICKNESS (in.)	R (in.)	CABLE INLETS
15	8"	5/16"	7 1/2"	A, B
20	10"	5/16"	10"	A, B
25	11"	5/16"	1'-0 1/2"	A, B
30	13"	5/16"	1'-3"	A, B
35	14"	5/16"	1'-5 1/2"	A, B, C
40	15"	5/16"	1'-8"	A, B, C
45	17"	5/16"	1'-10 1/2"	A, B, C
50	19"	5/16"	2'-1"	A, B, C, D
55	20"	5/16"	2'-3 1/2"	A, B, C, D
60	21"	5/16"	2'-6"	A, B, C, D, E

**NOTES:**

- ① Number of cable inlets depends on arm L (See Cantilever Signal Arm Data Table). The inlet diameter shall be 1 3/4" with rubber grommet (Typ.)
- ② Optional splice can be used for greater than 40' arm length. The splice shall be located a minimum of 30' from the pole. The end extension section of the arm shall have a wall thickness of 3/16" or greater. Field assembly shall achieve a snug tight joint (Min. overlap not less than 1.5 times the inside dimension of the end section).
- ③ Arm rise R is measured in the undeflected position without vertical loads on the arm.
- ④ See Page 5 for Handhole B details.
5. See Page 6 and 7 for placement of signal and signs for each arm length.
- ⑥ If seam welds are used, the weld location for the arms shall be along the bottom, and on the side of pole as shown.

INDIANA DEPARTMENT OF TRANSPORTATION

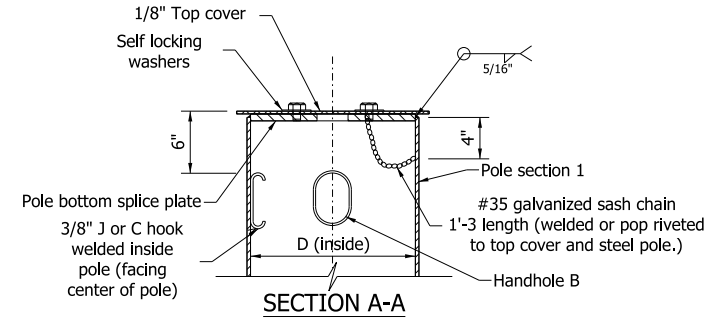
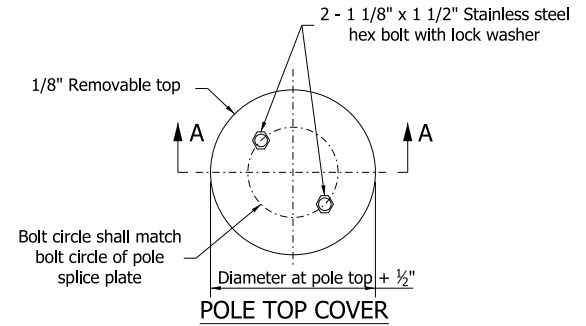
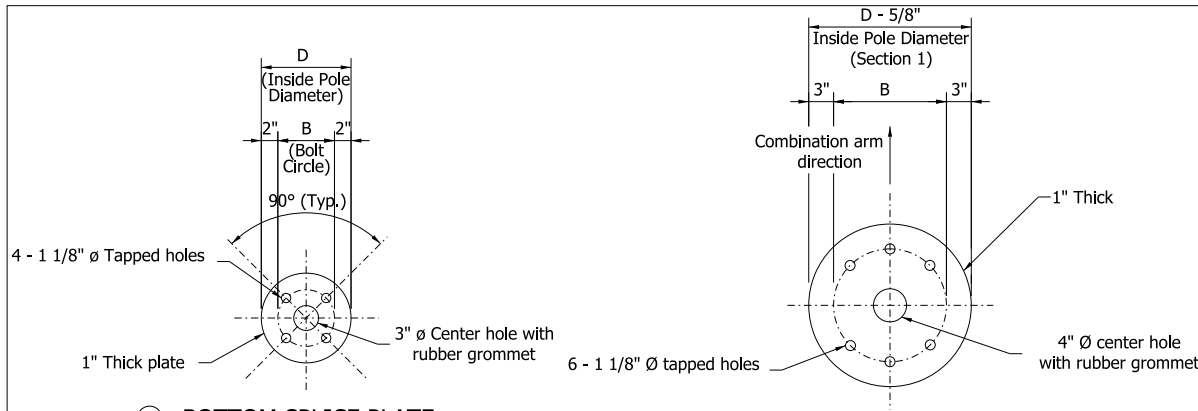
TRAFFIC SIGNAL CANTILEVER STRUCTURE  
SIGNAL ARM DIMENSIONS & DETAILS

**NOTES:**

- ① See Page No. 5 for Handhole A details.
- 2 See Standard Drawing No. E805-SGGR-01 to 03 for grounding details
- ③ See Page No. 5 for Handhole B details.

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL CANTILEVER STRUCTURE  
POLE DIMENSIONS AND DETAILS  
ELEVATION



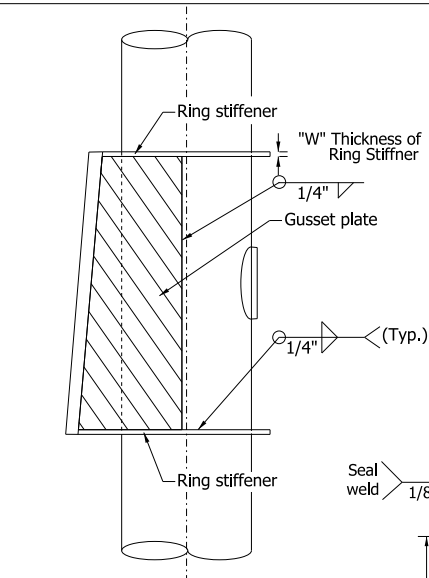
**NOTES:**

① See Page No. 11 and 12 for bottom splice plate orientation with combination arm.

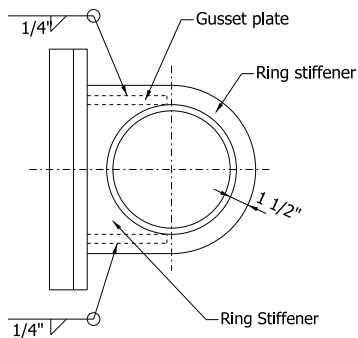
2 Bolt circle shall allow clearance for the plate washer. Cutting or trimming the washer will not be allowed.

INDIANA DEPARTMENT OF TRANSPORTATION

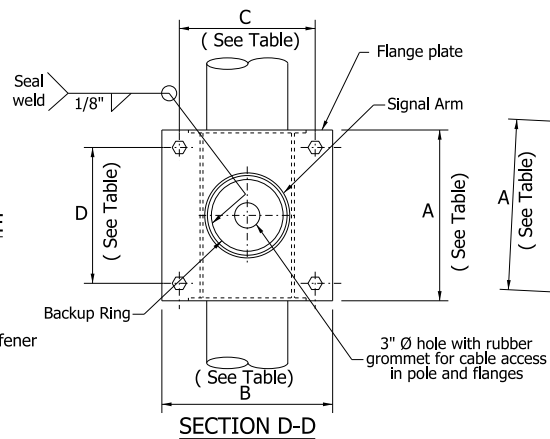
TRAFFIC SIGNAL CANTILEVER STRUCTURE  
BASE PLATE , BOTTOM SPLICE PLATE DETAILS



ELEVATION OF GUSSET PLATE

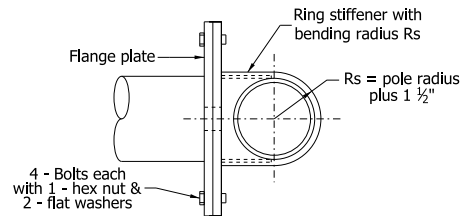


TOP OF GUSSET PLATE

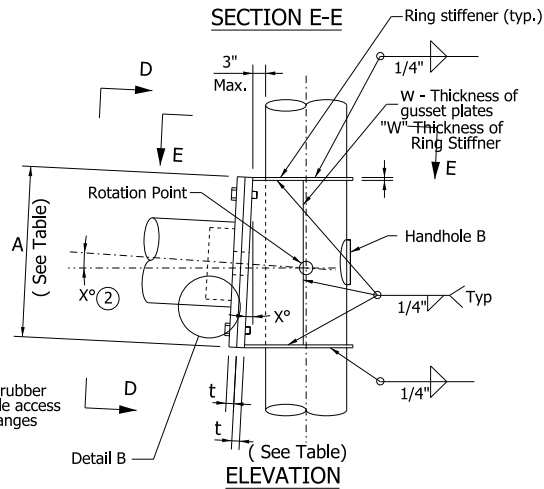


SECTION D-D

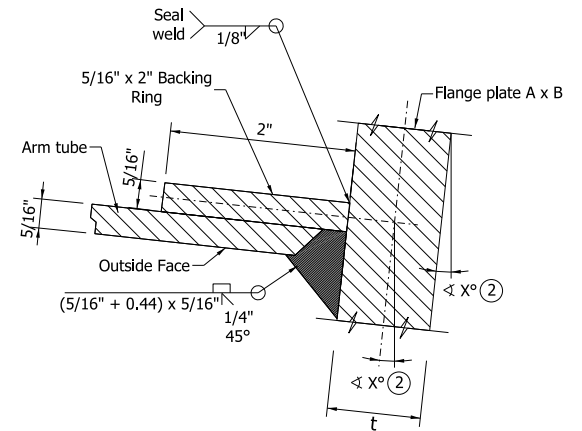
SIGNAL ARM CONNECTION DETAIL



SECTION E-E



ELEVATION



DETAIL B - ARM WELD

## NOTES:

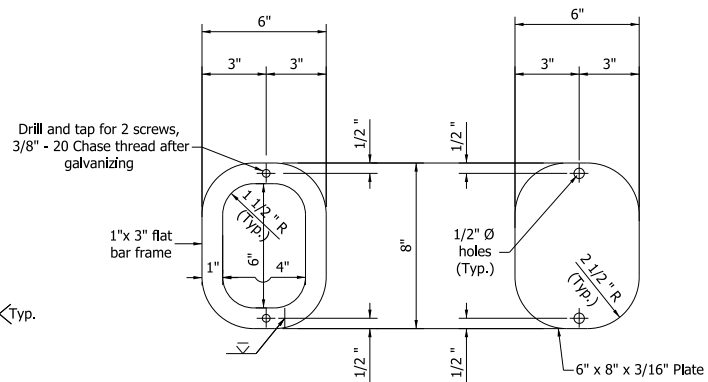
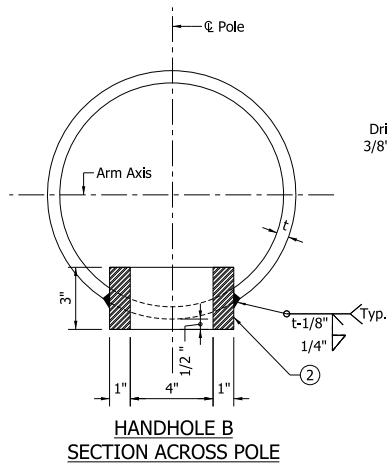
1. See Page No. 5 for Handhole B details.
2. The required signal arm rise shall be built into the gusset plate at the angle X. The angle X is described as arc tan R/L, where R is the arm rise and L is the arm length. Both R and L vary and are listed in the Cantilever Signal Arm Data table on Page No. 1.

TABLE OF PLATES AND BOLTS FOR SIGNAL CANTILEVER ARM

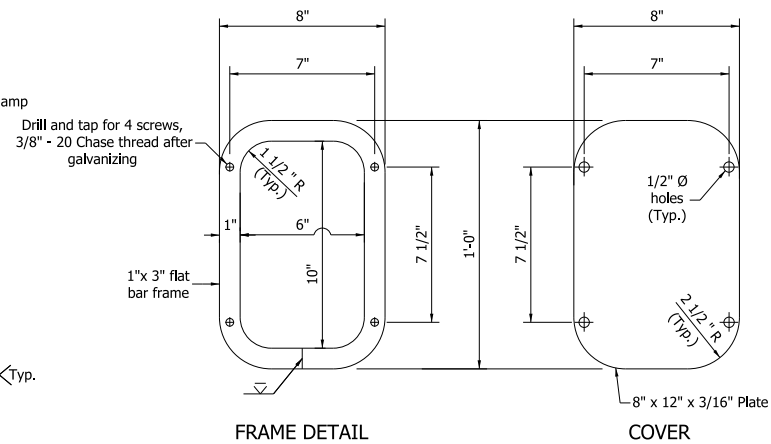
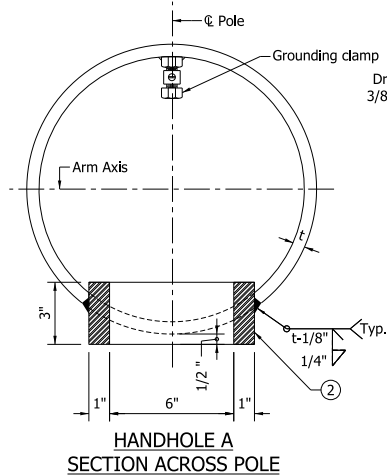
ARM LENGTH	FLANGE PLATE A x B	BOLT PATTERN C x D	RING STIFFNER GUSSET PLATE w	FLANGE PLATE THICKNESS t	BOLT
15' TO 35'	22" X 22"	17 1/2" X 17 1/2"	3/8"	1 1/2"	1 1/8" - 7 UNC x 4 1/4" LONG
36' TO 60'	33" X 33"	27 1/2" X 27 1/2"	1/2"	1 3/4"	1 1/2" - 6 UNC x 6 1/4" LONG

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL CANTILEVER STRUCTURE  
SIGNAL ARM CONNECTION DETAILS



HANDHOLE B



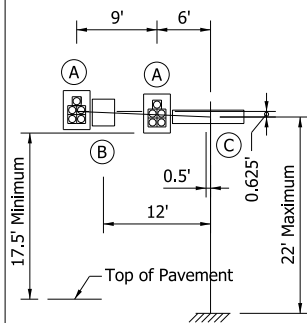
HANDHOLE A

**NOTES:**

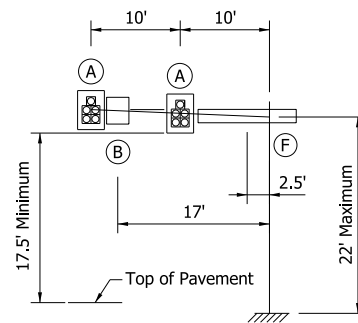
- 1 Handhole A shall be used at the base of the pole. Handhole B shall be used at all other locations.
- ② In lieu of fabricated handhole frame as shown, frame may be cut from 3" plate (rolling direction vertical).
- 3 See Page No. 2 for handhole locations.

INDIANA DEPARTMENT OF TRANSPORTATION

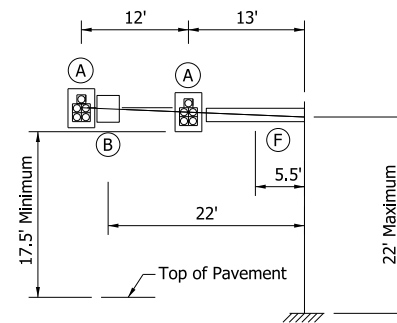
TRAFFIC SIGNAL CANTILEVER STRUCTURE  
HANDHOLE DETAILS



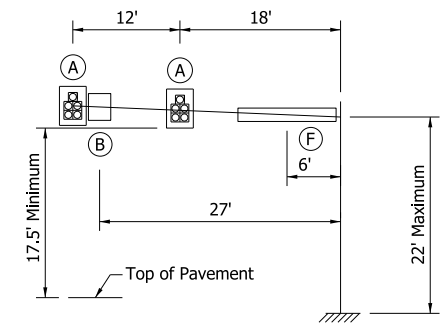
15' ARM



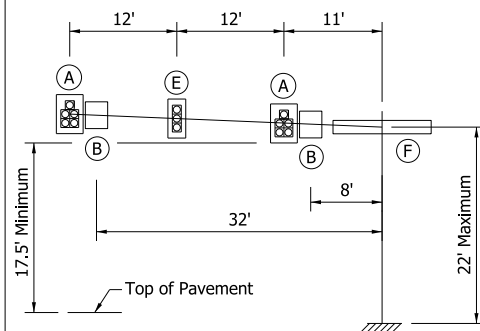
20' ARM



25' ARM



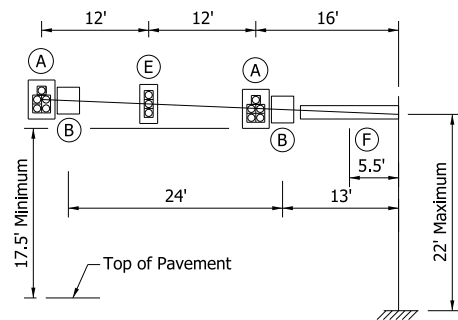
30' ARM



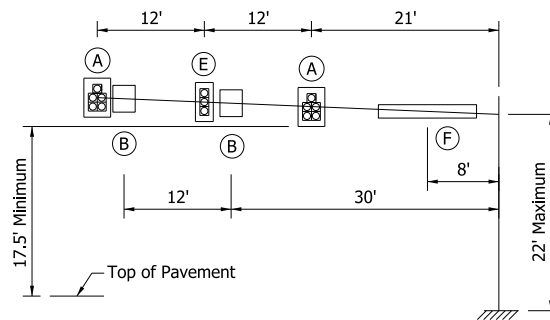
35' ARM

LEGEND	
Device	Description
(A)	12" - 5 Section Signal Head With Backplates
(B)	36" x 30" Regulatory Sign
(C)	18" x 96" Street Name Sign
(E)	12" - 3 Section Signal Head With Backplates
(F)	18" x 132" Street Name Sign

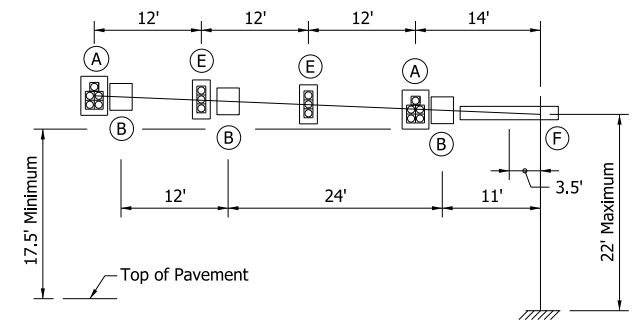
INDIANA DEPARTMENT OF TRANSPORTATION  
TRAFFIC SIGNAL CANTILEVER STRUCTURE  
PLACEMENT OF SIGNALS AND SIGNS  
LOADING FOR ARMS 35' OR LESS



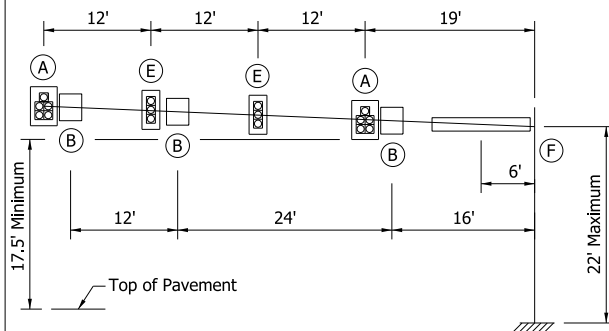
40' ARM



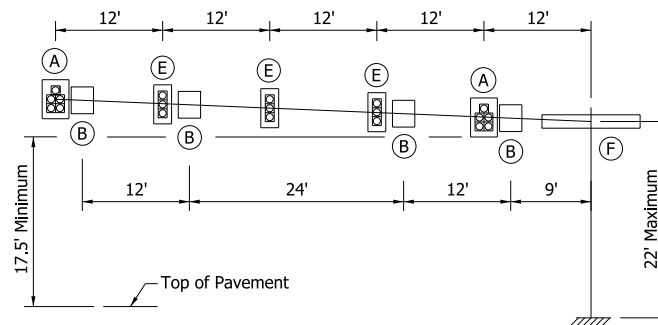
45' ARM



50' ARM



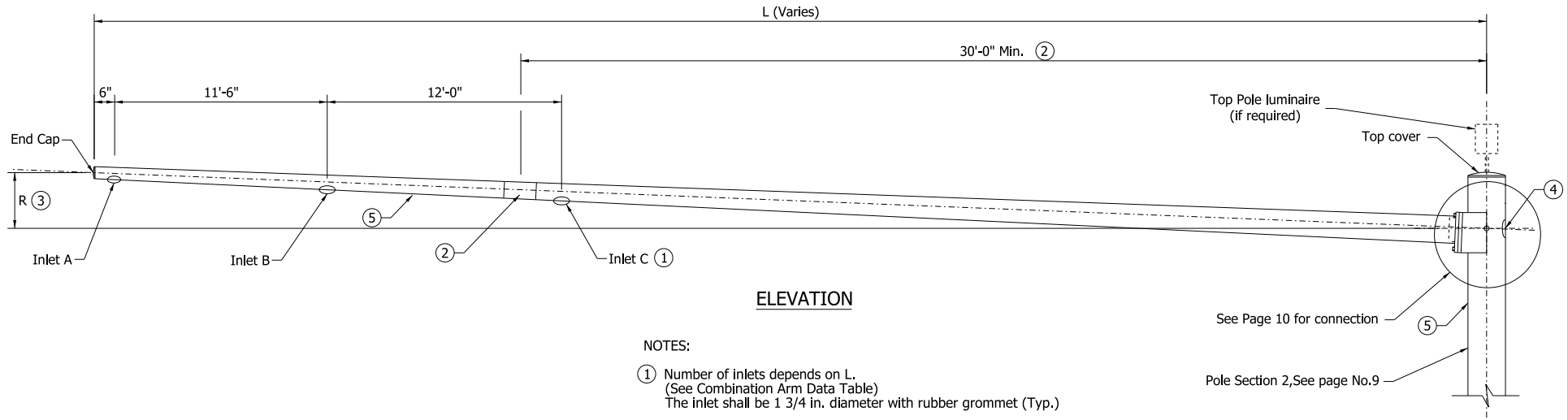
55' ARM



60' ARM

NOTE:  
See Page No. 6 for Legend.

INDIANA DEPARTMENT OF TRANSPORTATION  
TRAFFIC SIGNAL CANTILEVER STRUCTURE  
PLACEMENT OF SIGNALS AND SIGNS  
LOADING FOR ARMS > 35' TO 60'



### ELEVATION

#### NOTES:

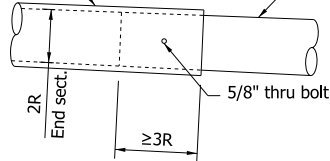
- ① Number of inlets depends on L.  
(See Combination Arm Data Table)  
The inlet shall be 1 3/4 in. diameter with rubber grommet (Typ.)
- ② Optional splice can be used for arm length greater than 40'.  
The splice shall be located a minimum of 30' from the pole.  
The end extension section of the arm shall have a wall thickness of 1/8" or greater. Field assembly shall achieve a snug tight joint (Min. overlap not less than 1.5 times the inside dimension of the end section).
- ③ Measured in deflected position after cameras are in place.
- ④ See Page No. 5 for Handhole B details.
- ⑤ If seam welds are used, the weld location for the arms shall be along the bottom, and on the side of the pole as shown.

### VERTICAL CLEARANCE CRITERIA

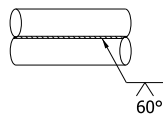
Maintain 40'-0" minimum clearances from top of pavement to the camera lens.

End section extension with wall thickness 1/8" and with drilled hole for 5/8" bolt

Base section with wall thickness 5/16" and field drilled hole for 5/8" Bolt



② OPTIONAL ARM SPLICE DETAIL



⑤ TYPICAL SEAM WELD

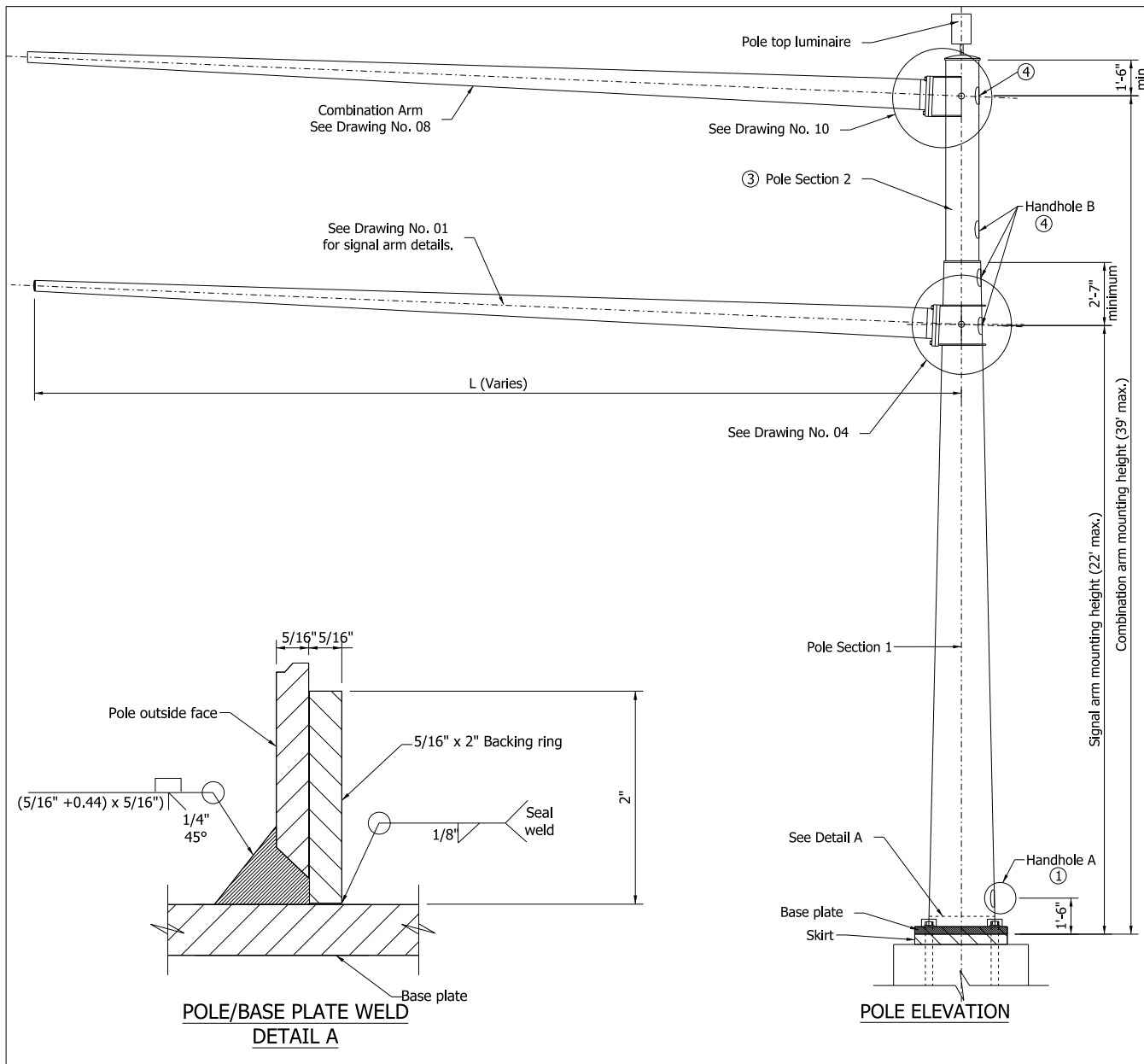
### COMBINATION ARM DATA

L (Ft.)	ARM DIAMETER AT POLE	ARM THICKNESS	R ③	CABLE INLETS ①
15'	5.5"	1/8"	7 1/2"	A
20'	5.5"	1/8"	10"	A
25'	7.0"	1/8"	1'-0 1/2"	A
30'	8.0"	1/8"	1'-3"	A, B
35'	8.0"	1/8"	1'-5 1/2"	A, B
40'	9.0"	1/8"	1'-8"	A, B, C
45'	10.0"	1/8"	1'-10 1/2"	A, B, C
50'	11.0"	1/8"	2'-1"	A, B, C
55'	11.0"	1/8"	2'-3 1/2"	A, B, C
60'	12.0"	1/8"	2'-6"	A, B, C

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL CANTILEVER STRUCTURE  
COMBINATION ARM DIMENSIONS & DETAILS



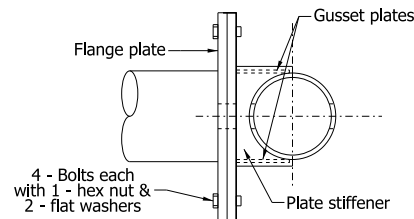
**NOTES:**

- ① See Page No. 5 for Handhole A details.
- 2 See Standard Drawings No. E805-SGGR-01 to 03 for grounding details.
- ③ Base diameter of Pole Section 2 shall be equal to top diameter of Pole Section 1.
- ④ See Page No.5 for Handhole B details.

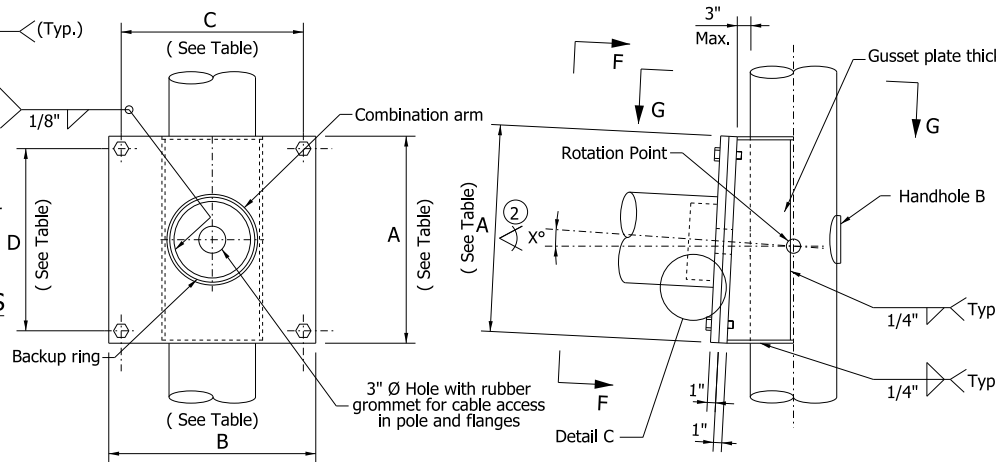
**POLE DATA - SIGNAL CANTILEVER STRUCTURE**

CANTILEVER ARM LENGTH L	SECTION 1		SECTION 2 COMBINATION	
	BASE DIAMETER (IN.)	WALL THICKNESS (IN.)	BASE DIAMETER (IN.)	WALL THICKNESS (IN.)
15' - 35'	17	5/16"	See Note ③	1/8"
36' - 60'	24	5/16"	See Note ③	1/8"

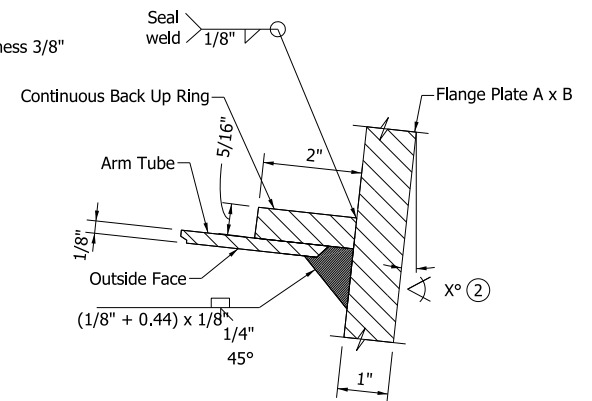
INDIANA DEPARTMENT OF TRANSPORTATION  
TRAFFIC SIGNAL CANTILEVER STRUCTURE  
COMBINATION POLE DIMENSIONS AND DETAILS  
ELEVATION



SECTION G-G



ELEVATION



DETAIL C - ARM WELD

NOTES:

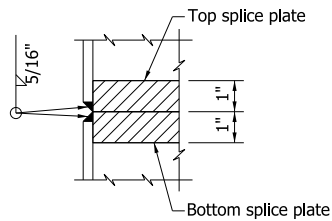
- 1 See Page No. 5 for Handhole details.
- ② The required combination arm rise shall be built into the gusset plate at the angle X. The angle X is described as  $\arctan R/L$ , where R is the combination arm rise and L is the arm length. Both R and L vary and are listed in the Cantilever Signal Arm Data table on page No. 1.

### COMBINATION ARM CONNECTION DETAIL

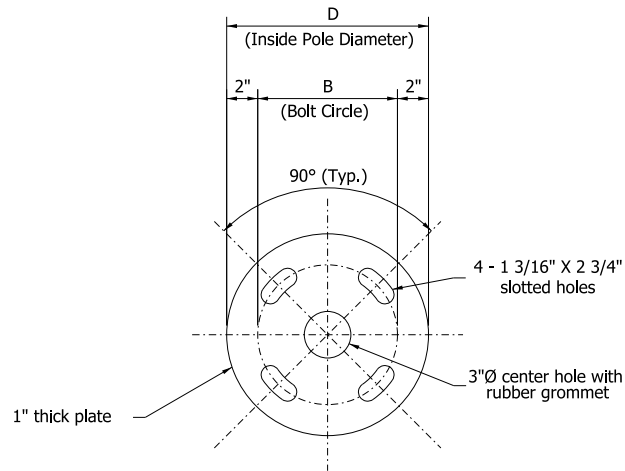
TABLE OF PLATES AND BOLTS FOR COMBINATION ARM				
ARM LENGTH	FLANGE PLATE A x B	BOLT PATTERN C x D	FLANGE PLATE THICKNESS	BOLT
15' TO 35'	20" x 20"	17" x 17"	1"	7/8" - 9 UNC x 3.5" LONG
36' TO 60'	25" x 25"	22" x 22"	1"	7/8" - 9 UNC x 3.5" LONG

INDIANA DEPARTMENT OF TRANSPORTATION

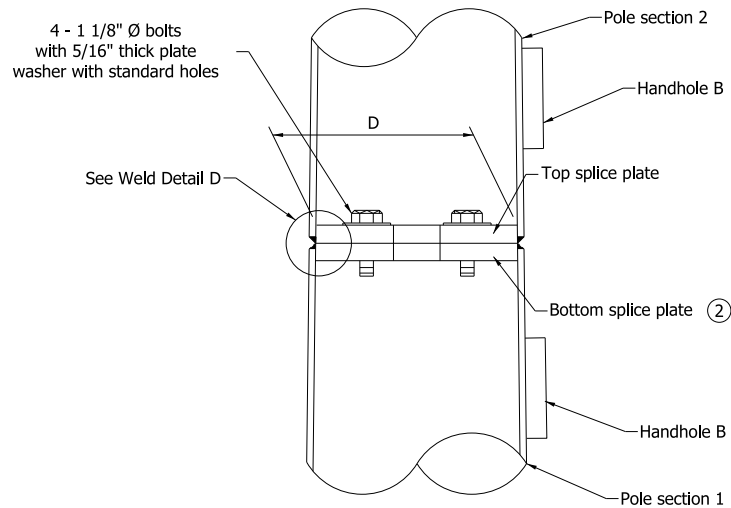
## TRAFFIC SIGNAL CANTILEVER STRUCTURE COMBINATION ARM CONNECTION DETAILS



WELD DETAIL D



TOP SPLICE PLATE

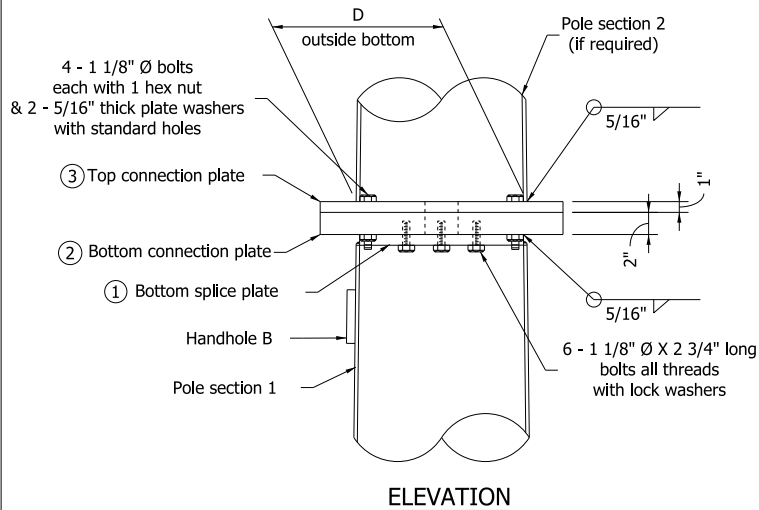
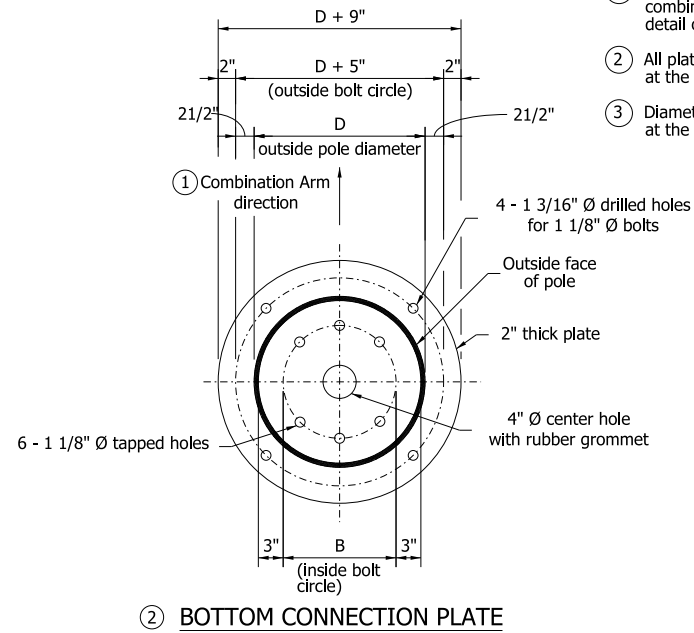
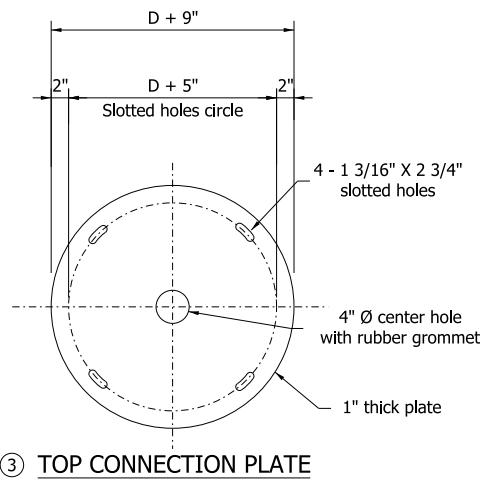


ELEVATION

NOTES:

- 1 Diameter at the bottom of Pole section 2 shall match the diameter at the top of Pole section 1.
- ② See page No.3 for bottom splice plate details.

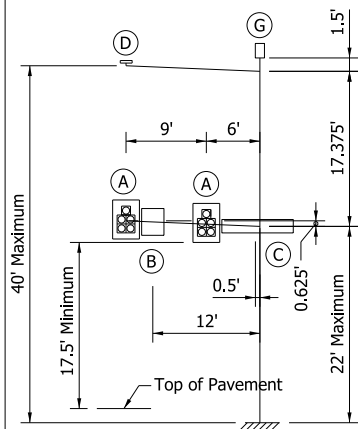
INDIANA DEPARTMENT OF TRANSPORTATION  
TRAFFIC SIGNAL CANTILEVER STRUCTURE  
COMBINATION POLE SPLICE DETAILS  
FOR ARMS 35' OR LESS



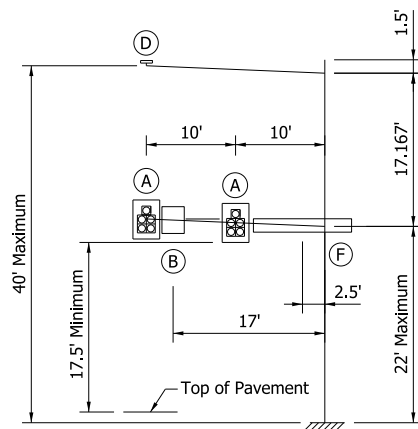
**NOTES:**

- ① Orient bottom splice and bottom connection plates with combination arm as shown on the bottom splice plate detail on Page No. 3.
- ② All plate dimensions shall be based upon the outside diameter D at the top of pole section 1.
- ③ Diameter at bottom of pole section 2 shall match the diameter at the top of pole section 1.

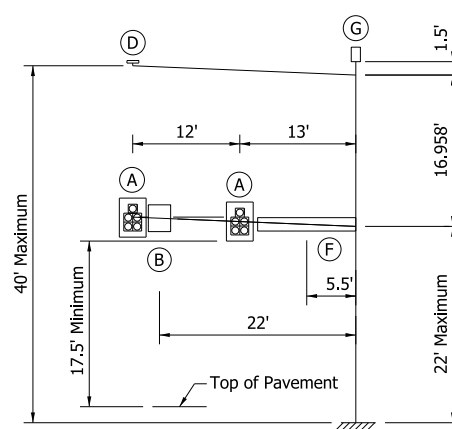
INDIANA DEPARTMENT OF TRANSPORTATION  
TRAFFIC SIGNAL CANTILEVER STRUCTURE  
COMBINATION POLE SPLICE DETAILS  
FOR ARMS > 35' TO 60'



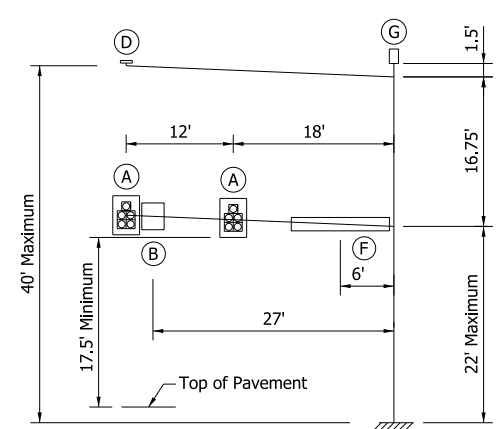
15' ARM



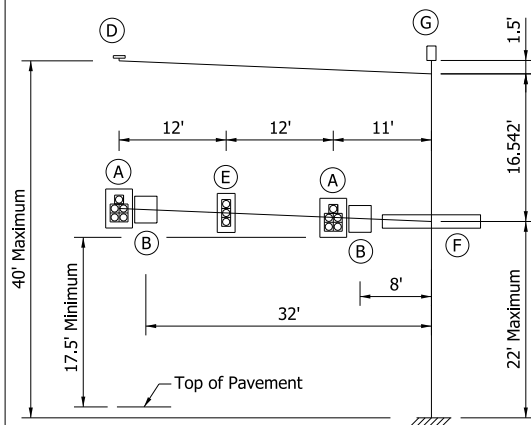
20' ARM



25' ARM



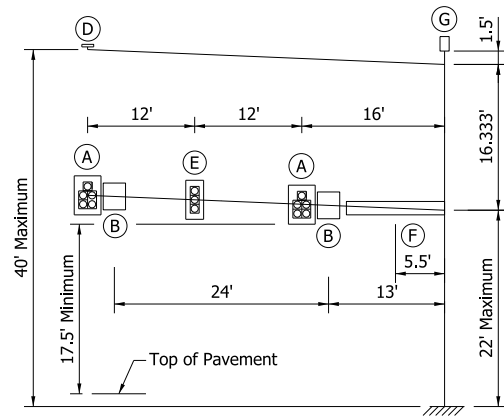
30' ARM



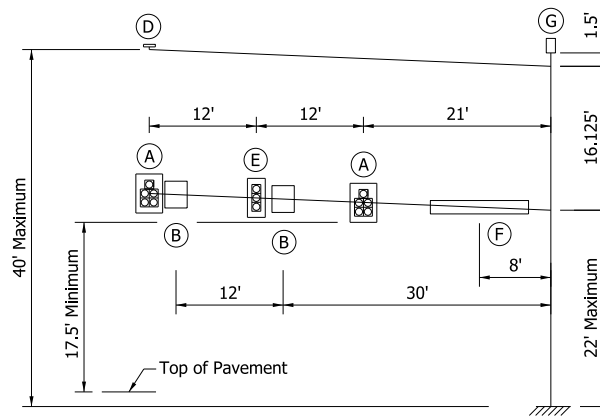
35' ARM

LEGEND	
Device	Description
(A)	12" - 5 Section Signal Head With Backplates
(B)	36" x 30" Regulatory Sign
(C)	18" x 96" Street Name Sign
(D)	1 - Mounted Camera
(E)	12" - 3 Section Signal Head With Backplates
(F)	18" x 132" Street Name Sign
(G)	Top Pole Luminaire

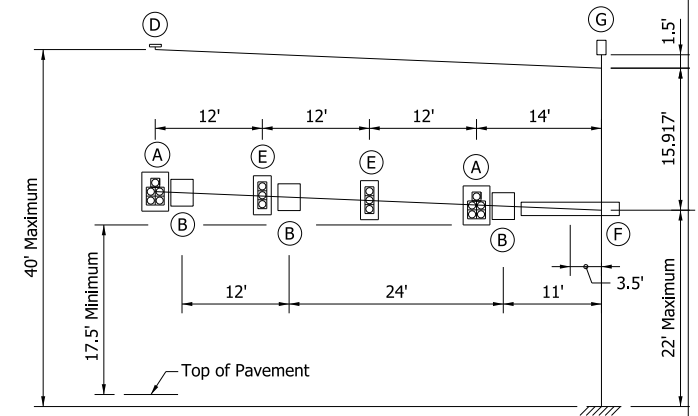
INDIANA DEPARTMENT OF TRANSPORTATION  
TRAFFIC SIGNAL CANTILEVER STRUCTURE  
COMBINATION ARM LOADING  
FOR 35' ARM OR LESS



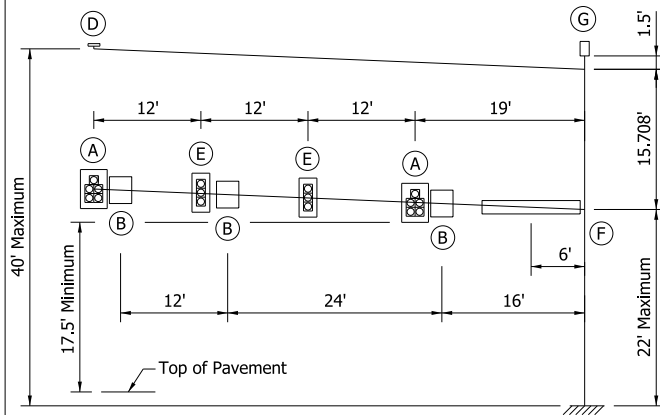
40' ARM



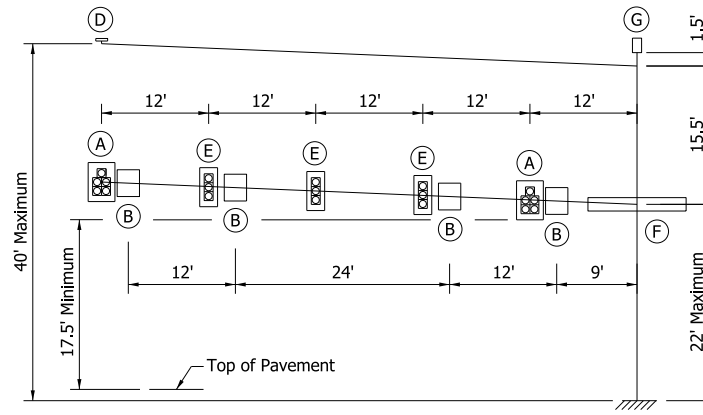
45' ARM



50' ARM



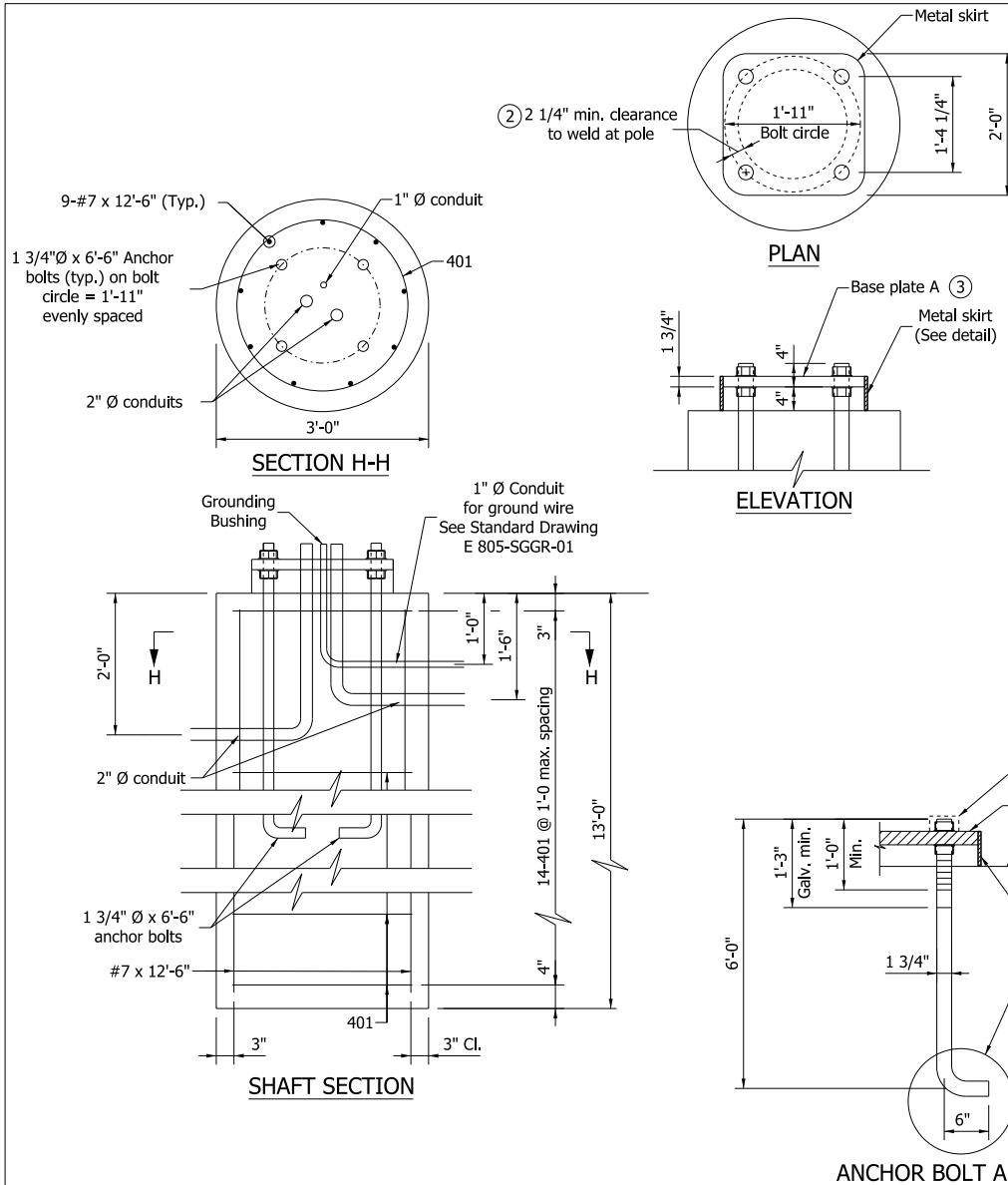
55' ARM



60' ARM

NOTE:  
See Page No. 13 for Legend.

INDIANA DEPARTMENT OF TRANSPORTATION  
TRAFFIC SIGNAL CANTILEVER STRUCTURE  
COMBINATION ARM LOADING  
FOR ARMS > 35' TO 60'



## NOTES:

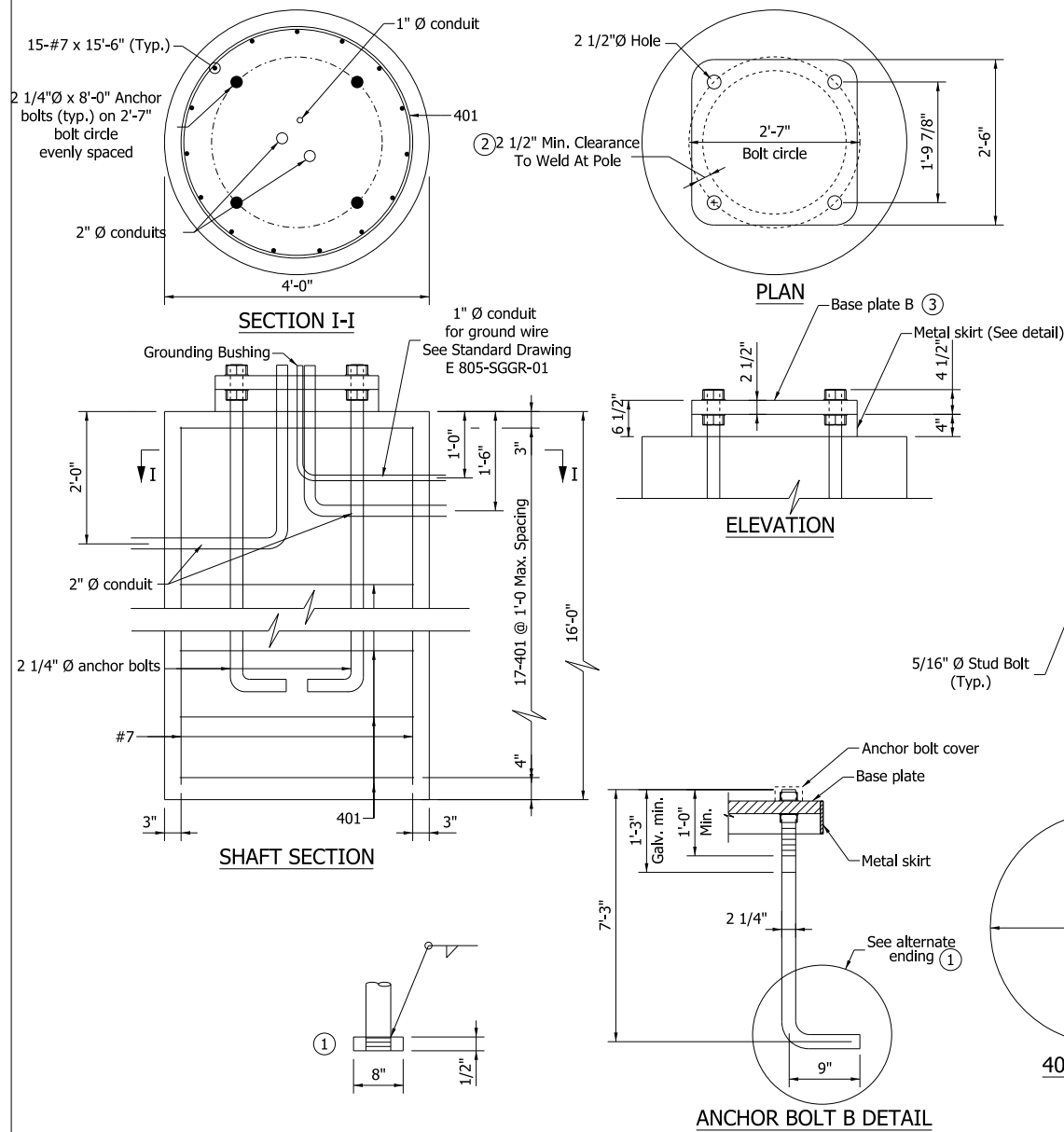
- ① Alternate 6" x 6" x 1/2" square washer with hex nut welded to lower end may be substituted for bent anchor bolt.
- ② Bolt circle, b, shall allow clearance for the plate washer. Cutting or trimming the washer will not be allowed.
- ③ See Page No. 3 for base plate A details.

### BILL OF MATERIALS DRILLED SHAFT TYPE A

#### REINFORCING BARS

SIZE OR MARK	NUMBER OF BARS	LENGTH (ft.)	WEIGHT (lbs.)
#7	9	12'-6"	
TOTAL #7			230
401	14	9'-5"	
TOTAL #4			88
TOTAL REINFORCING BARS			318
CONCRETE			
CONCRETE, CLASS A			3.4 CYS

INDIANA DEPARTMENT OF TRANSPORTATION  
TRAFFIC SIGNAL CANTILEVER STRUCTURE  
DRILLED SHAFT FOUNDATION  
FOR ARMS 35' OR LESS  
TYPE A



## NOTES:

- ① Alternate 8" x 8" x 1/2" square plate tapped and welded to the anchor bolt may be substituted for bent anchor bolt.
- ② Bolt circle, b, shall allow clearance for the plate washer. Cutting or trimming the washer will not be allowed.
- ③ See Page No. 3 for base plate B details.

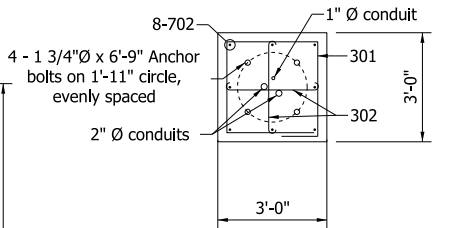
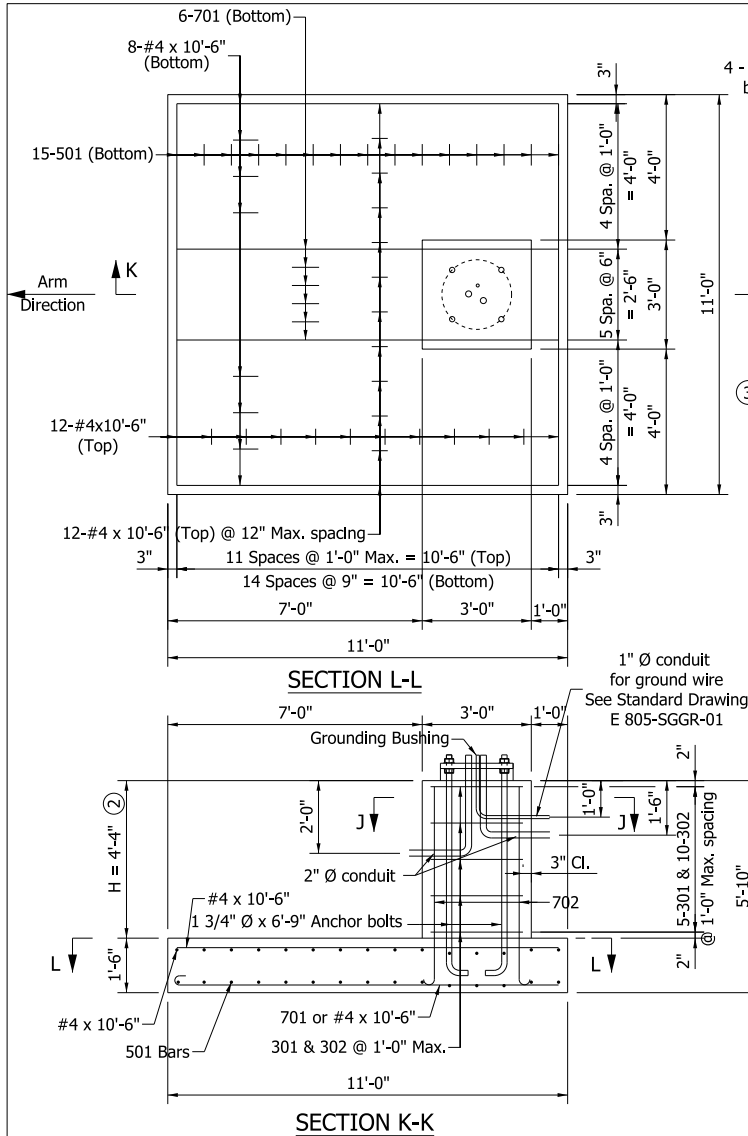
**BILL OF MATERIALS  
DRILLED SHAFT  
TYPE B**
**REINFORCING BARS**

SIZE OR MARK	NUMBER OF BARS	LENGTH (ft.)	WEIGHT (lbs.)
#7	15	15'-6"	
TOTAL #7			475
401	17	12'-6"	
TOTAL #4			142
TOTAL REINFORCING BARS			617
<b>CONCRETE</b>			
CONCRETE, CLASS A			7.5 CYS

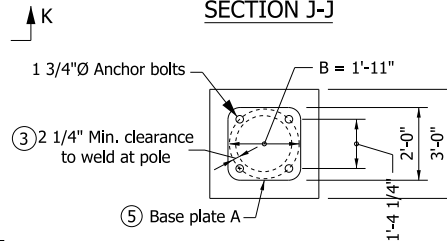
INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL CANTILEVER STRUCTURE  
DRILLED SHAFT FOUNDATION FOR ARMS >35' TO 60'  
TYPE B

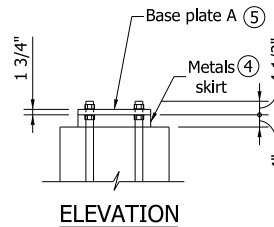




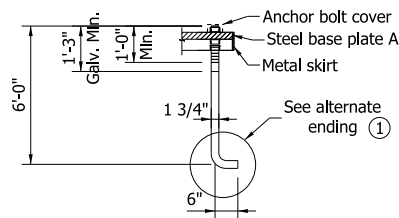
## SECTION J-J



## PLAN



ELEVATION

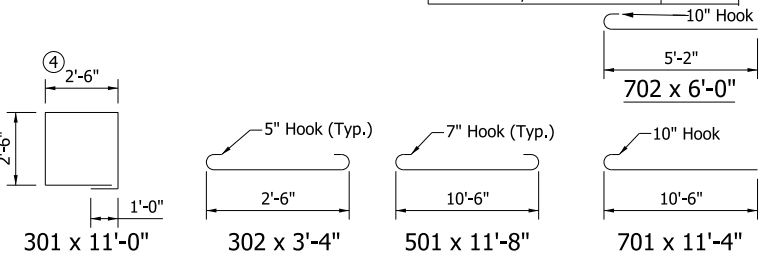


### ANCHOR BOLT C DETAIL

- NOTES:

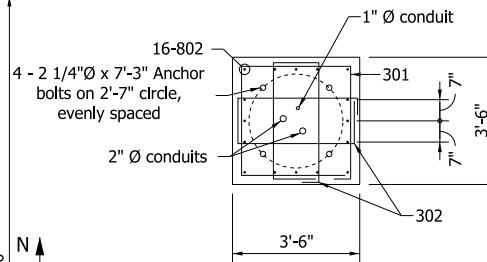
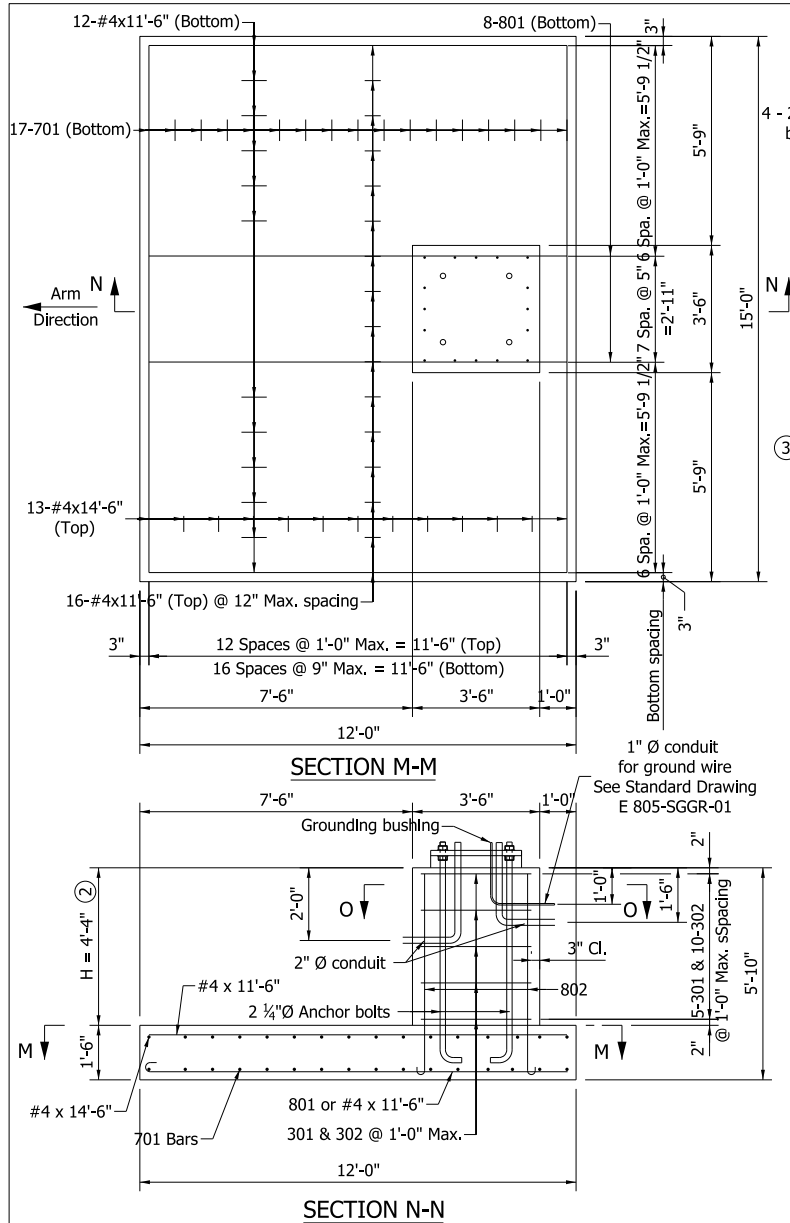
- ① Alternate 6" x 6" x 1/2" square washer with hex nut welded to lower end may be substituted for the bend in the anchor bolt.
- ② Minimum H required is 4 ft. soil cover over the entire footing area.
- ③ Bolt circle, B, shall allow clearance for the plate washer. Cutting or trimming the washer will not be allowed.
- ④ See Page No. 15 for metal skirt details.
- ⑤ See Page No. 3 for base plate A details.

BILL OF MATERIALS SPREAD FOOTING TYPE C			
REINFORCING BARS			
SIZE OR MARK	NUMBER OF BARS	LENGTH (ft.)	WEIGHT (lbs.)
701	6	11'-4"	
702	8	6'-0"	
TOTAL #7			237
501	15	11'-8"	
TOTAL #5			183
#4	32	10'-6"	
TOTAL #4			224
301	5	11'-0"	
302	10	3'-4"	
TOTAL #3			33
TOTAL REINFORCING BARS			677
CONCRETE			
CONCRETE, CLASS A			8.2 CYS

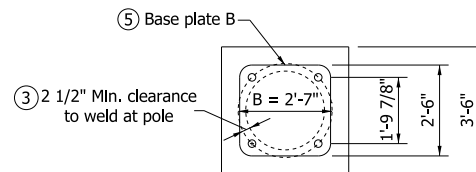


INDIANA DEPARTMENT OF TRANSPORTATION

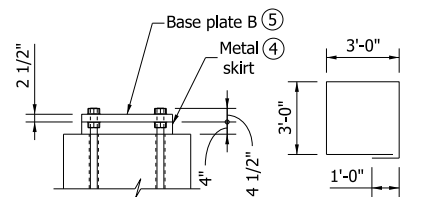
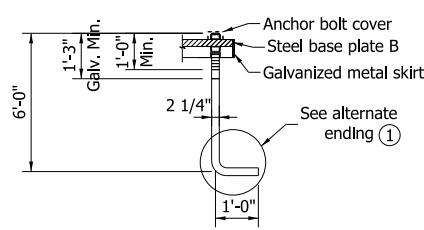
### TRAFFIC SIGNAL CANTILEVER STRUCTURE SPREAD FOUNDATION FOR ARMS 35' OR LESS TYPE C



SECTION 0-0



## PLAN

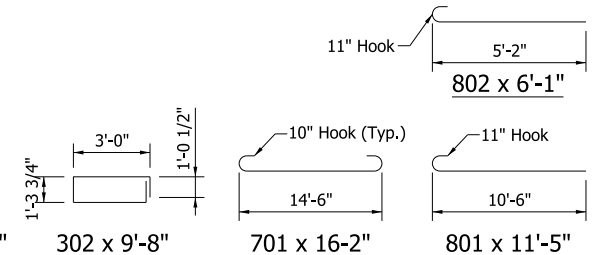
ELEVATION

### ANCHOR BOLT D DETAIL

- NOTES:

- ① Alternate 8" x 8" x 1/2" square plate tapped and welded to anchor bolt may be substituted for the bent anchor bolt.
- ② Minimum H required is 4 ft. soil cover over the entire footing area.
- ③ Bolt circle, B, shall allow clearance for the plate washer. Cutting or trimming the washer will not be allowed.
- ④ See Page No. 16 for metal skirt details.
- ⑤ See Page No. 3 for base plate B details.

BILL OF MATERIALS SPREAD FOOTING TYPE D			
REINFORCING BARS			
SIZE OR MARK	NUMBER OF BARS	LENGTH (ft.)	WEIGHT (lbs.)
801	8	11'-5"	
802	16	6'-1"	
TOTAL #8			504
701	17	16'-2"	
TOTAL #7			562
#4	13	14'-6"	
#4	28	11'-6"	
TOTAL #4			341
301	5	13'-0"	
302	10	9'-8"	
TOTAL #3			61
TOTAL REINFORCING BARS			1468
CONCRETE			
CONCRETE, CLASS A			12.0 CYS



INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL CANTILEVER STRUCTURE  
SPREAD FOUNDATION FOR ARMS > 35' TO 60'  
TYPE D